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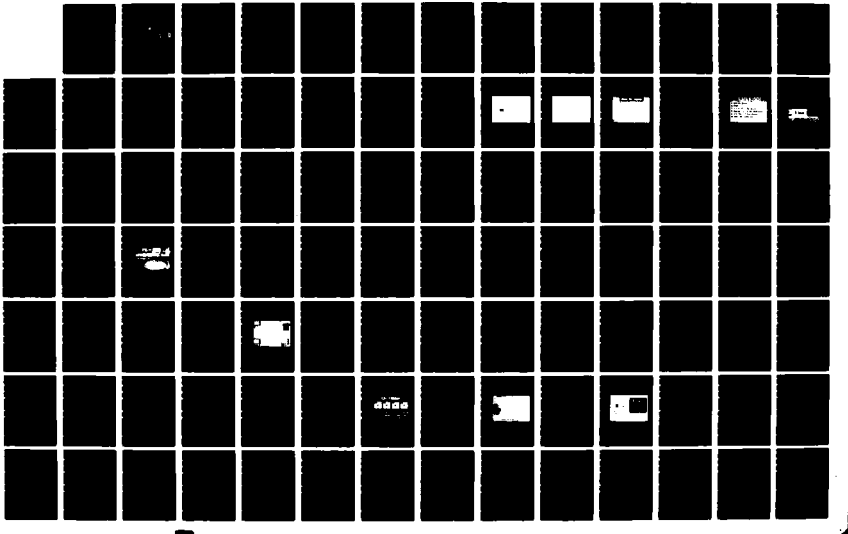

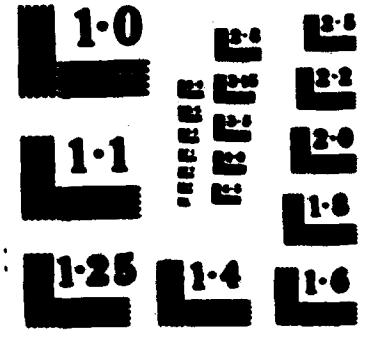
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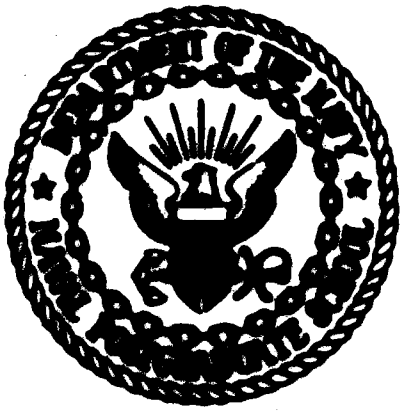
Monterey, California



THESIS

AN ON-LINE TUTORIAL FOR THE ADMINISTRATIVE SCIENCES PERSONAL COMPUTER LABORATORY

by

Karen M. Overall

September 1987

Thesis Advisor: Barry A. Frew

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This thesis describes the development of an on-line tutorial that shows novice computer users how to use the IBM PCs and network in the Administrative Science Department PC Laboratory. The tutorial is designed in a modular fashion so the user can easily exit the software at a number of logical stopping points. The topics that are covered are: 1) the IBM PC in general, 2) IBM PC-DOS, 3) the network, 4) a list of the software available on the network, and 5) sources available for further details. A copy of the tutorial on a floppy diskette may be obtained by contacting the NPS Administrative Sciences PC Laboratory.

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An On-line Tutorial
for the Administrative Sciences
Personal Computer Laboratory

by

Karen M. Overall
Lieutenant, United States Navy
B.S., Eastern New Mexico University, 1979

Submitted in partial fulfillment of the
requirements for the degree of

MASTER OF SCIENCE IN INFORMATION SYSTEMS

from the

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Author: Karen M Overall
Karen M. Overall

Approved by: Barry A. Frew
Barry A. Frew, Thesis Advisor

Thomas P. Moore
Thomas P. Moore, Second Reader

Willis R. Greer, Jr., Chairman,
Department of Administrative Sciences

James M. Fremgen,
Acting Dean of Information and Policy Sciences

ABSTRACT

This thesis describes the development of an on-line, self-paced tutorial that shows novice computer users how to use the IBM PCs and network in the Administrative Science Department PC Laboratory. The tutorial is designed in a modular fashion so the user can easily exit the software at a number of logical stopping points. The topics that are covered are: 1) the IBM PC in general, 2) IBM PC-DOS, 3) the network, 4) a list of the software available on the network, and 5) sources available for further details. A copy of the tutorial on a floppy diskette may be obtained by contacting the NPS Administrative Sciences PC Laboratory.

TABLE OF CONTENTS

I. INTRODUCTION AND BACKGROUND

In the spring of 1987, the Administrative Sciences Department of the Naval Postgraduate School opened a personal computer laboratory. The lab is designed for students who will be using microcomputers in their classes. It is equipped with 25 IBM personal computers connected through an IBM PC local area network. Four IBM PC AT computers serve as hosts for the network. One stand-alone IBM PC AT is connected to an overhead projector for instructors' use.

Most curricula taught by the Administrative Sciences Department include at least one course involving the use of computers, either mainframe or microcomputers. Because most Administrative Science students come to NPS with little computer experience, there is a severe need for basic instruction. There are classes available to instruct students in computer usage applicable to their curriculum. However, there is also the need for a "quick and dirty" introduction to get the students started with the microcomputer as soon as possible. This tutorial is designed to meet that need. It contains enough information to help the student become familiar with some basic ideas and terms. It enables the user to prepare a diskette, manipulate files, access software, and learn about the network. And, for those students desiring more information, it includes a list of written reference material that may be obtained at the school, and a glossary of frequently used computer terms.

II. TOPICS COVERED BY THE TUTORIAL

The on-line tutorial contains five topics. These topics are described in the remainder of this chapter. Each topic area can be reached directly from a main menu which is displayed when the user first starts the tutorial, and again upon completion of each topic area.

A. IBM PC BASICS

The first section of this tutorial is designed to introduce the user to the basic components of a personal computer. It is not intended to explain specifically how a computer works. It familiarizes the student with parts of the personal computer that he may be interacting with in further usage. The basic characteristics of Random Access Memory, Read Only Memory, Disk Drives, Peripherals and the System Unit are discussed.

B. IBM PC-DOS

IBM's personal computer disk operating system (DOS) is explained in this section in a very simplified manner. Specific DOS commands that the user will need are explained, such as how to format a diskette; name, copy and erase files; and display a list of files on the diskette. These commands are described in enough detail for the user to know how to use them as soon as they are finished reading about them.

C. IBM PC LOCAL AREA NETWORK

This section describes the advantages of using a network and the capabilities available on the IBM local area network. Another tutorial is being written as a thesis for the IBM PC local area network (LAN). This second tutorial will cover, in detail, how to use the network. Therefore, only the basics are discussed in this tutorial, followed by a list of functions performed by the LAN.

D. SOFTWARE ON THE NETWORK

The purpose of this section is to inform the new user of the application software packages that are available for their use on the network. This module will need to be updated periodically as software is deleted or added. The Maintenance section of this thesis (Chapter III) contains information on changing this tutorial.

E. FOR MORE INFORMATION

This section of the on-line tutorial lists, by topic, references that are available. Because this tutorial is designed for the novice and covers only the basics in each topic area, it is important that the user know where else to turn for more detailed information. The second portion of this section of the tutorial is a glossary and is designed as a reference tool. It covers most of the terms a new user might encounter when first learning about computers.

III. MAINTENANCE

A. THE SOFTWARE

IBM PC Storyboard is a software package that generates automated presentations on an IBM PC or compatible. It allows creation of screen displays of text, figures, charts, or graphics. Then lets you organize them into stories for presentation with a wide variety of special effects. PC Storyboard consists of the following four programs: [Ref. 1]

1. **Picture Maker**

Picture Maker allows you to create and modify pictures, graphics, charts, and text displays. It has the capability of "cutting and pasting" portions of pictures that can be added to or deleted from existing screens. It also comes with a library of graphics that can be incorporated with text.

2. **Picture Taker**

Picture Taker is used to capture the images of screens from other PC application programs. When the graphics mode of Picture Taker is used, the captured images can be edited using Picture Maker.

3. **Story Editor**

Story Editor allows you to organize pictures into presentations. It has several features that help you make the presentations:

- you can select a variety of preprogrammed picture-to-picture transition methods that allow one picture to dissolve into another;
- you can select other variables such as display times, colors, and whether the picture will be developed as a full picture or as a series of partial pictures;
- you can use supplied macros as subroutines to help with the special effects;
- you can run your story in part or in full while using Story Editor so that you can quickly and easily experiment with various presentation techniques.

4. **Story Teller**

Story Teller allows you to present the stories created with Story Editor. It can be copied onto the same diskette as a story and pictures so that the story can be distributed and run from a single diskette.

B. SPECIAL CONSIDERATIONS

In order for maintenance to be done on this tutorial it will be necessary to get the software and documentation for IBM PC Storyboard. Explaining all the commands that are necessary to operate the program is beyond the scope of this thesis. However, the following problems were encountered and are described here to help with effective maintenance:

- Picture Taker can be used to capture images of an application program screen. (Word Perfect was used to create the text portions of this tutorial.) One advantage of Picture Taker is that you may take a series of pictures under the same filename so that the pictures will automatically be numbered in sequence. However, when using Storyboard on a computer booted up with any version of DOS other than 3.1, this capability is lost.
- The graphics files created by Picture Maker and stored with a ".pic" extension take up a lot of memory. By the time the Storyteller program is copied onto the diskette, along with the autoexec.bat file to automatically run the program, and all the text files, a limited amount of space remains for graphics files. Therefore, the size of the files must considered when modifying any portion of the tutorial.

IV. TEST AND EVALUATION

A. PARTICIPANTS

A number of NPS students were asked to use the prototype tutorial. Students with a variety of computing skills were desired in order to get a range of comprehensive critiques. Students varied from final quarter Information Systems majors to new students with little or no computer experience. The wide range of participants was desired to check the tutorial for accuracy as well as readability. Participants were volunteers who completed a critique sheet that gave them room to comment on any or all sections of the tutorial as well as give their overall opinion of the program.

B. RESULTS

The results of the critiques gathered from all participants were quite favorable. Constructive comments were received regarding the wording of certain passages. These passages were revised to improve clarity. Because there were no major organization changes to be made in the test tutorial, revision of the program was not necessary. The critiques resulted in mostly favorable comments, so, the modified prototype became the final tutorial.

V. IMPLEMENTATION

A copy of the revised and finalized program is installed on the network in the Administrative Sciences PC Laboratory. This will allow easy access by all students who will be using the Lab. Approximately 10 diskettes are also available for copying. These diskettes have write protect tabs on them to prevent alterations of the files.

There are no copyright restrictions on this program (other than the restrictions on the IBM Storyboard software), so each student may make a copy of the tutorial from the diskettes provided. The process of copying the tutorial also gives the student a chance to practice what he has learned.

The tutorial on the network has its own subdirectory, so all of the files will be in one area and can easily be copied with global commands.

APPENDIX A
TUTORIAL SOURCE CODE

This appendix contains the source code printed from PC Storyboard software.

Story Name: bitmaps

Line	Label	Picture Name or Command	Display picture usage: Method	Dir	Line	Type	Start Pos	Set Color: Back	Area	From the Picture: Upper X,Y	From the Picture: Lower X,Y	To Screen: Upper X,Y
1		[illegible]	[illegible]	UP	CTR	BLKD	..5	BLK	PAINT	0,0	319,71	[illegible]
2		/COLOR [illegible]	CREATE	EDIT-M	EDIT							
3		/0	SPLIT	[illegible]	[illegible]			LGRN		132,72	299,173	
4		/color grey	FADE	[illegible]								
5		/0	EXPLODE	UP	[illegible]					0,72	186,173	
6		/CLEAR 0	EXPLODE	IN-M	[illegible]	.5	0	LGRN	BLK	PBLA		
7												
8		[illegible]	PUSH	[illegible]	[illegible]	FAST	.5	LGRY	BLK	PAINT	0,2	319,40	[illegible]
9		/0		LEFT			.5				0,40	319,59	[illegible]
10		/0		RIGHT			1				0,80	319,137	[illegible]
11		/0	CREATE	EDIT-M		[illegible]					0,135	319,[illegible]	39,135
12		/0	PUSH	UP							0,140	319,[illegible]	[illegible]
13		/COLOR [illegible]	BLACKBOX	[illegible]	[illegible]	[illegible]				PBLA			
14		/0	FADE		[illegible]	FAST	KEY			PAINT	132,102	319,155	[illegible]
15		/CLEAR 0	REPLACE			FAST	0	LGRY	BLK	PBLA			
16		ABORT!	[illegible]	UP		.5	0			PAINT	66,0	253,37	[illegible]
17		/0	PUSH	RIGHT		.5					0,0	66,37	[illegible]
18		/0		LEFT							254,0	319,37	[illegible]
19		/0	[illegible]	[illegible]		[illegible]	1				0,37	319,104	[illegible]
20		/0	SPLIT	EDIT-M	[illegible]		KEY				0,104	319,159	
21		TOPICS.CAP :	CHECKBOX			[illegible]			BLK	PAINT	0,0	79,23	[illegible]
22		/CLEAR 0	EXPLODE	IN-M	YEL	0	0			PBLA			
23													
24	MAIN	[illegible]	[illegible]		[illegible]	0	0	LGRN		PBLA			
25		/[illegible] [illegible]	EXPLODE	[illegible]	CTR	.7	0			PBLA			
26													
27		/[illegible]											
28		/F 1 [illegible] PC	[illegible]	EDIT-M		FAST							
29		/F 2 [illegible] [illegible]	SPLIT	IN-M									
30		/F 3 [illegible] [illegible]											
31		/F 4 [illegible] [illegible]											
32		/F 5 [illegible] [illegible]											
33		/F 8 [illegible] [illegible]											
34													
35	PC	[illegible]	REPLACE	[illegible]	[illegible]	0	0			PAINT	0,44	319,66	[illegible]
36		[illegible]					3				0,113	319,137	0,104
37		/[illegible]					KEY			PAINT	140,105	319,[illegible]	93,[illegible]
38		/CLEAR				0	0			PBLA			
39		PORTRAIT	CREATE	EDIT-M	YEL	1.3	.5	LGRY	GRAY	PAINT	0,0	319,66	[illegible]
40		/0	SPLIT		EDIT					PAINT	0,66	319,93	[illegible]
41		/0	REPLACE	[illegible]	[illegible]						0,93	48,[illegible]	
42		/0		[illegible]							272,93	319,[illegible]	[illegible]
43		/0	SPLIT	IN-M	YEL						66,93	[illegible],140	
44		/0	FADE								66,140	271,[illegible]	
45		/0	EXPLODE	EDIT-M	[illegible]						184,93	271,147	
46		[illegible]	FADE	[illegible]	YEL	FAST	KEY			PAINT	140,107	[illegible],151	93,[illegible]
47													
48		PCBASICS.CAP :	CHECKBOX		CTR	FAST	KEY			PAINT	0,0	79,23	[illegible]
49		2	CREATE	EDIT-M									
50		3	EXPLODE	EDIT-M									

Story Name: [illegible]

Line	Label	Picture Name or Command	Method	Display picture usage Bkr	Line	Type	Host Ver	Dot Color Pal	Back	Area	From the Picture Upper X,Y	Lower X,Y	To Screen Upper X,Y
51		4	[illegible]	LEFT									
52		5	[illegible]	LEFT									
53		6	[illegible]										
54		7	[illegible]	[illegible]									
55		8	[illegible]	[illegible]									
56		9	[illegible]										
57		10	[illegible]	[illegible]									
58		11	[illegible]										
59		12	[illegible]	[illegible]									
60		13	[illegible]	[illegible]									
61		14	[illegible]	[illegible]									
62		15	[illegible]	LEFT									
63		16	[illegible]										
64		[illegible]	[illegible]				[illegible]		[illegible]	FULL			
65													
66	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0	0			POINT	0,68	319,85	[illegible]
67		[illegible]					3				0,113	319,157	0,164
68		[illegible]									0,119	319,168	0,164
69		[illegible]					[illegible]			POINT	100,107	255,197	92,168
70		[illegible]					0			FULL			
71		[illegible]	[illegible]		[illegible]	0	0			FULL	0,0	319,168	[illegible]
72		[illegible]	[illegible]	LEFT	VAL	.3	0		[illegible]	FULL	0,0	319,168	[illegible]
73		[illegible]	[illegible]	[illegible]		0	0			POINT	32,121	48,134	[illegible]
74		[illegible]											
75		[illegible]											
76		[illegible]	[illegible]	[illegible]			[illegible]			POINT	100,107	255,197	[illegible]
77		[illegible]	[illegible]						[illegible]	POINT	0,0	79,22	[illegible]
78		2	[illegible]		[illegible]								
79		3	[illegible]										
80		4	[illegible]										
81		5	[illegible]										
82		6	[illegible]										
83		7	[illegible]										
84		8	[illegible]										
85		9	[illegible]										
86		10	[illegible]										
87		11	[illegible]										
88		12	[illegible]										
89		13	[illegible]										
90		14	[illegible]										
91		15	[illegible]										
92		[illegible]	[illegible]						[illegible]				
93													
94	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0	1			POINT	0,84	319,168	[illegible]
95		[illegible]					3				0,113	319,157	0,164
96		[illegible]									0,119	319,168	0,164
97		[illegible]					[illegible]			POINT	100,107	255,197	92,168
98		[illegible]	[illegible]	[illegible]	[illegible]		0		[illegible]	FULL			
99		[illegible]	[illegible]	[illegible]	[illegible]	0	0	[illegible]	[illegible]	FULL	0,0	79,199	[illegible]
100		[illegible]	[illegible]		[illegible]	.3							

Story Name: bitbasis

Line	Label	Picture Name or Command	Display picture using: Method	Dir	Line	Time	Wait for	Set Color Pal	Back	Area	From the Picture Upper I,Y	Lower I,Y	To Screen Upper I,Y
101		PRESS	SPLIT	IN-H		1	KEY			PART	100,107	235,197	92,190
102		KEYBRK.CAP 1	STRIPES		GRN	.5			LRED		0,0	79,23	SAME
103		2	FADE										
104		3	EXPLODE										
105		4	DIAGONAL										
106		5	CROSS										
107		6	CHECKER										
108		7	EXPLODE										
109		8	FADE										
110		9	STRIPES										
111		10	CROSS										
112		11	DIAGONAL										
113		12	CHECKER										
114		13	STRIPES										
115		14	CROSS										
116		15	EXPLODE										
117		/ZERO MAIN							BLK				
118													
119	SOFT	MAIN4	REPLACE	DOWN	NONE	0	0			PART	0,105	319,125	SAME
120		QUITSOFT					3				0,113	319,157	0,164
121		/QUITSOFT									0,119	3190,168	0,164
122		/SPRESS					KEY			PART	100,107	235,197	92,188
123		/CLEAR					0			FULL			
124		SOFTSTART	NONE				.5	LGRY	BLK	FULL			
125		/ERROR ERROR	EXPLODE	OUT-H	GRN	.3	0						
126		SOFTSTART	NONE			0	KEY						
127		SOFTWARE.CAP 1	EXPLODE	IN-V	CYN	.5	KEY			PART	0,0	79,23	SAME
128		/ZERO MAIN							BLU				
129													
130	SOFO	MAIN5	REPLACE	DOWN	NONE	0	1			PART	0,125	319,145	SAME
131		QUITSOFT					3				0,113	319,157	0,164
132		/QUITSOFT									0,119	319,168	0,164
133		/SPRESS	REPLACE	RIGHT			KEY			PART	100,107	235,197	92,188
134		/CLEAR					0			FULL			
135		FYISTART	NONE				0	LGRY	BLK	FULL			
136		/ERROR ERRX	STRIPES		RED	FAST	.5			FULL			
137		PRESS	FADE	DOWN		0	KEY			PART	100,107	235,197	0,189
138		FYSOFW.CAP 1	CHECKER			.5	KEY			PART	0,0	79,23	SAME
139		CLOSE	NONE		NONE		0		BLK	FULL			
140		/ERROR NONE					0						
141		PRESS	WEAVE				KEY			PART	100,105	235,197	88,183
142		GLOSSARY.CAP 1	CHECKER		GRN					PART	0,0	79,23	SAME
143		2	CROSS										
144		3	DIAGONAL										
145		4	EXPLODE										
146		5	FADE										
147		7	REPLACE										
148		8	STRIPES										
149		9	CHECKER										
150		10	CROSS										

Story Name: b:thesis

Line	Label	Picture Name or Command	Display picture using: Method	Dir	Line	Time	Wait for	Set Color Pal	Back	Area	From the Picture Upper I,Y	Lower I,Y	To Screen Upper I,Y
151		11	DIAGONAL										
152		12	EXPLODE										
153		13	FADE										
154		14	REPLACE										
155		15	STRIPES										
156		16	CHECKER										
157		17	CRUSH										
158		18	DIAGONAL										
159		/GOTO MAIN							BLK				
160													
161	END	MAIN	REPLACE	DOWN	NONE	0	0			PART	0,144	319,167	SAME
162		REMEMBER	STRIPES	LEFT	NONE	.5	1			PART	0,62	319,109	0,164
163		WAVES1	NONE			FAST	0						
164		/GOSUB WAVES	CHECKER		NONE	FAST	0	LGRY	BLK				
165		/END											
166													
167													
168													
169													
170													
171		/* Supplied MACROS											
172		/* Horizontal Sweeps											
173	horz	/d		RIGHT						PART	0,0	319,51	SAME
174		/d		LEFT							0,52	319,103	
175		/d		RIGHT							0,104	319,155	
176		/d		LEFT							0,156	319,199	
177		/return (restores FULL)								FULL			
178													
179		/* Vertical Sweeps											
180	vert	/d		DOWN						PART	0,0	63,199	
181		/d		UP							64,0	127,199	
182		/d		DOWN							128,0	191,199	
183		/d		UP							192,0	255,199	
184		/d		DOWN							256,0	319,199	
185		/return (from VERT)								FULL			
186													
187		/* Random Boxes											
188	boxes	/d								PART	160,52	239,104	SAME
189		/d									0,0	79,52	
190		/d									0,104	79,156	
191		/d									80,156	159,199	
192		/d									240,156	319,199	
193		/d									240,0	319,51	
194		/d									240,104	319,155	
195		/d									80,0	159,51	
196		/d									80,104	159,155	
197		/d									0,52	79,103	
198		/d									160,104	239,155	
199		/d									240,52	319,103	
200		/d									80,52	159,103	

Story Name: b:thesis

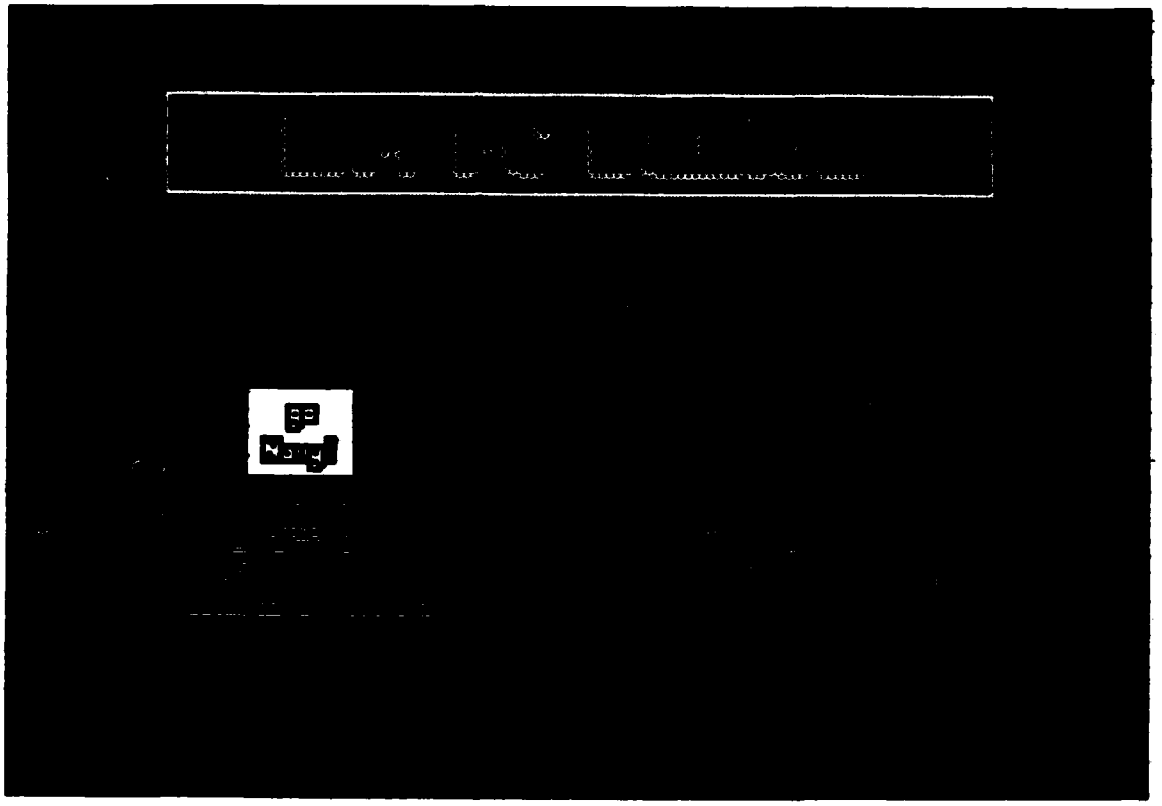
Line	Label	Picture Name or Command	Display picture using: Method	Dir	Line	Time	Unit for	Set Color Pal	Back	Area	From the Picture Upper I,Y	Lower I,Y	To Screen Upper I,Y
201		/d									0,136	79,199	
202		/d									160,136	239,199	
203		/d									160,0	239,31	
204		/return (from BOXES)								FULL			
205													
206		/3 Around Perimeter											
207	round	/d								PART	0,0	63,31	BASE
208		/d									64,0	127,31	
209		/d									128,0	191,31	
210		/d									192,0	255,31	
211		/d									256,0	319,31	
212		/d									256,32	319,103	
213		/d									256,104	319,135	
214		/d									256,136	319,199	
215		/d									192,136	255,199	
216		/d									128,136	191,199	
217		/d									64,136	127,199	
218		/d									0,136	63,199	
219		/d									0,104	63,135	
220		/d									0,32	63,103	
221		/d									64,32	127,103	
222		/d									128,32	191,103	
223		/d									192,32	255,103	
224		/d									192,104	255,135	
225		/d									128,104	191,135	
226		/d									64,104	127,135	
227		/return (from ROUND)								FULL			
228													
229	MINE	/0	REPLACE	RIGHT	MINE	.5	0			PART	0,0	319,6	BASE
230		/0		DOWN							316,0	319,199	
231		/0		LEFT							0,193	319,199	
232		/0		UP							0,0	3,199	
233		/0	SPLIT	OUT-H		1	1				164,24	307,133	
234		/0	FADE	DOWN	MINE	1	.5			FULL	0,6	163,199	
235		/RETURN								FULL			
236													
237	wave	WAVE31 (Run 8 cycles)	CHECKER	UP	BACK	2	0	LCHR		FULL	48,20	191,175	128,0
238		/gosub wave4											
239		/@gosub wave4											
240		/return											
241	wave4	/gosub s1											
242		/gosub s1											
243		/gosub s1											
244		/gosub s1											
245		/return											
246	s1	WAVE32 Load animation	REPLACE	RIGHT	MINE	0	0			PART	12,149	55,175	48,20
247		/d changes and									0,0	319,7	0,140
248		/d display each									144,147	211,188	180,7
249		/d quickly enough									0,0	319,15	0,140
250		/d to give									88,151	131,177	48,20

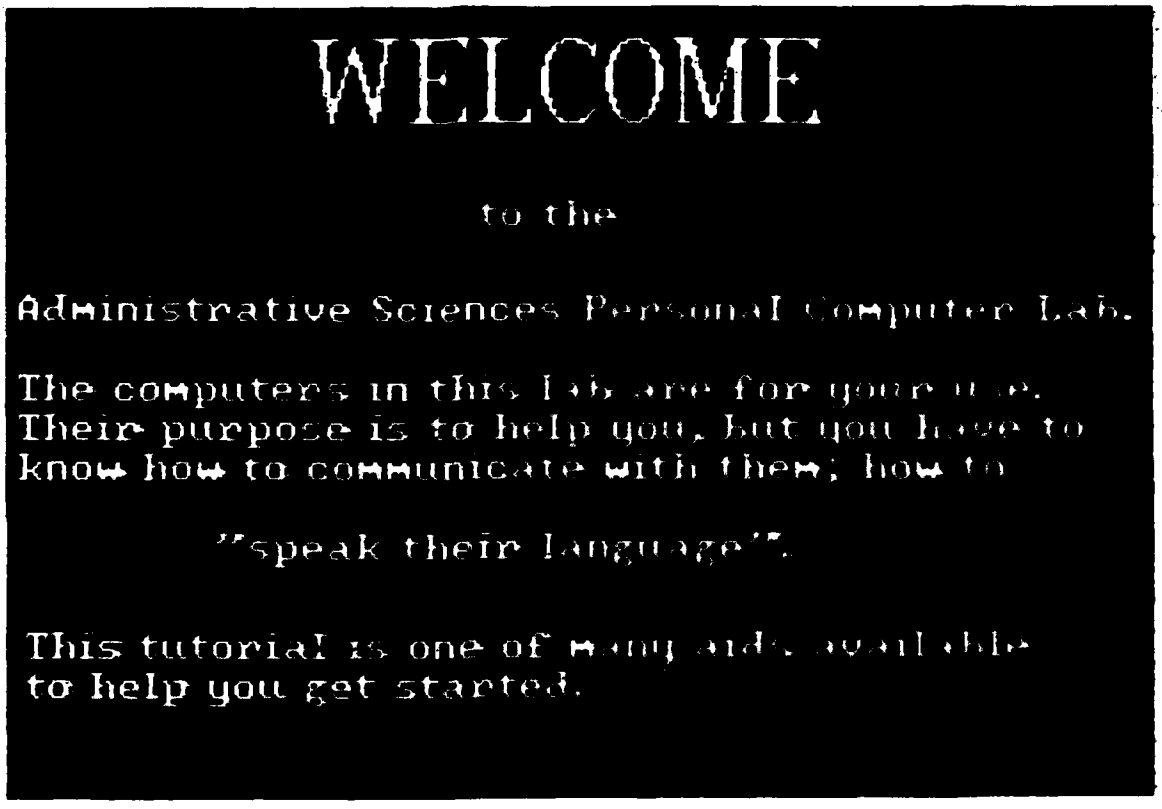
Story Name: b:thesis

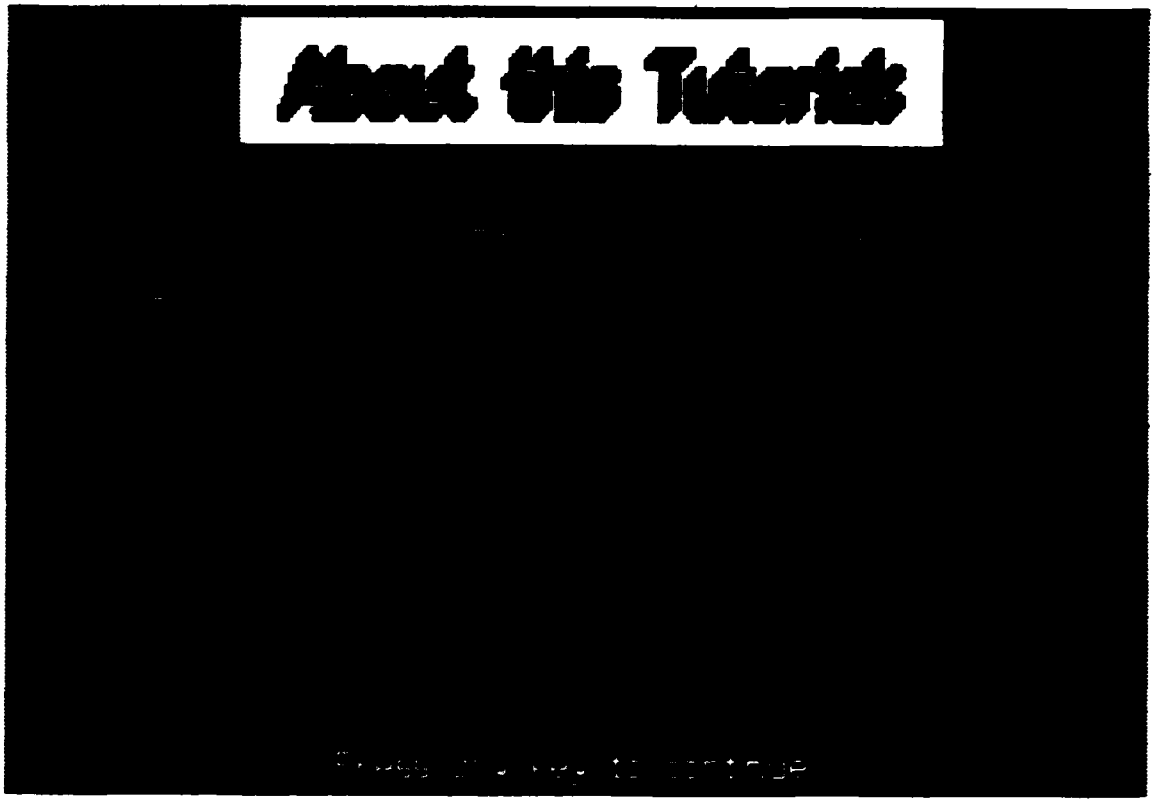
Line	Label	Picture Name or Command	Display picture using: Method	Dir	Line	Time	Unit for	Set Color Pal	Back	Area	From the Picture Upper I,Y	Lower I,Y	To Screen Upper I,Y
251	/d	appearance of									0,16	319,23	0,140
252	/d	motion.									144,175	211,195	100,7
253	/d										0,24	319,31	0,140
254	/d										20,152	63,178	40,30
255	/d										0,32	319,39	0,140
256	/d										220,147	295,160	100,7
257	/d										0,40	319,47	0,140
258	/d										55,126	120,102	40,30
259	/d										0,48	319,55	0,140
260	/d										220,175	295,195	100,7
261	/d										0,56	319,63	0,140
262	/d										0,64	319,71	0,140
263	/d										0,72	319,79	
264	/d										92,153	135,179	40,30
265	/d										0,80	319,87	0,140
266	/d										0,88	319,95	
267	/d										0,96	319,103	
268	/d										0,104	319,111	0,140
269	/d										88,130	131,176	40,30
270	/d										0,112	319,119	0,140
271	/d										0,120	319,127	
272	/d										0,128	319,135	
273	/d										0,136	319,143	
274	/return	(1 cycle done)											

APPENDIX B
THE TUTORIAL

This appendix contains the actual screen printout of each "page" of the tutorial.




WELCOME
to the
Administrative Sciences Personal Computer Lab.
The computers in this Lab are for your use.
Their purpose is to help you, but you have to
know how to communicate with them; how to
"speak their language".
This tutorial is one of many aids available
to help you get started.


About this Tutorial

The main topics discussed in the modules of this tutorial are:

1) **IBM PC BASICS** - this module defines the basic components of the computer and how you will use them.

2) **DOS** - this module explains what an operating system does, how to make it work fo you, and describes some commands that you may find useful.

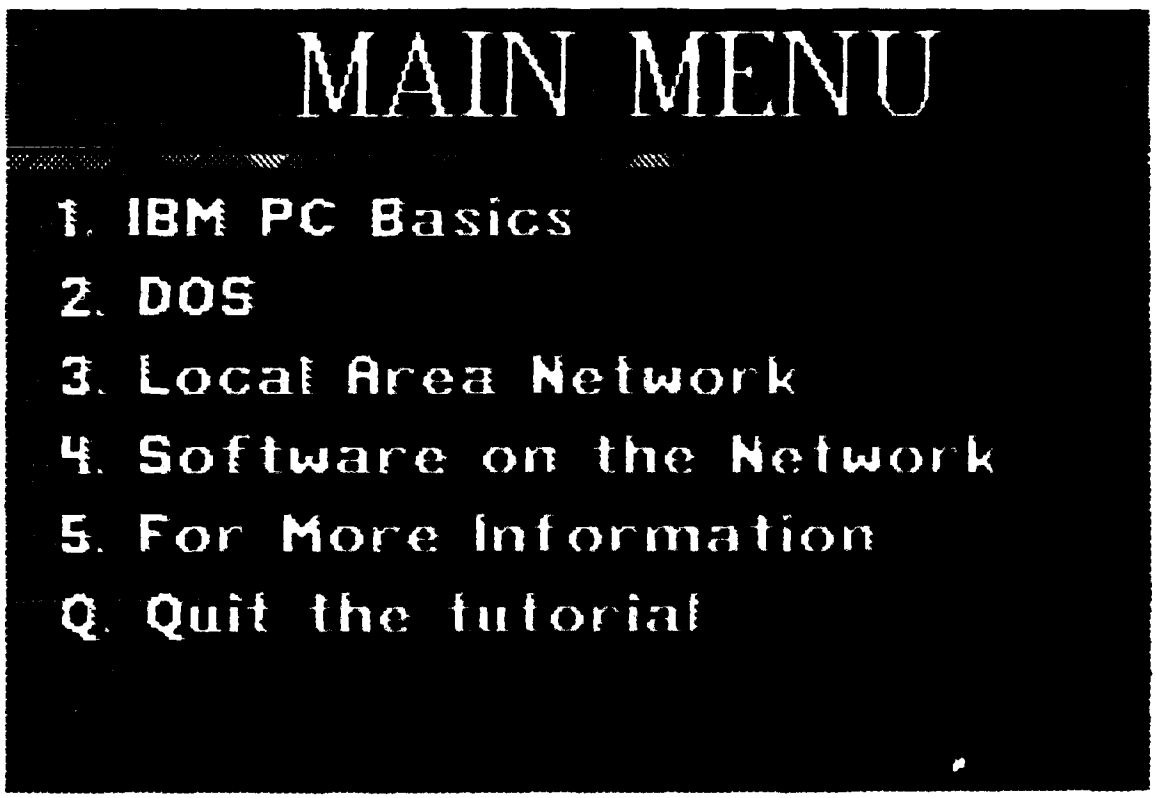
3) **THE PC LOCAL AREA NETWORK** - this module describes the basics of a computer network and how to access the local area network in the Administrative Sciences Lab.

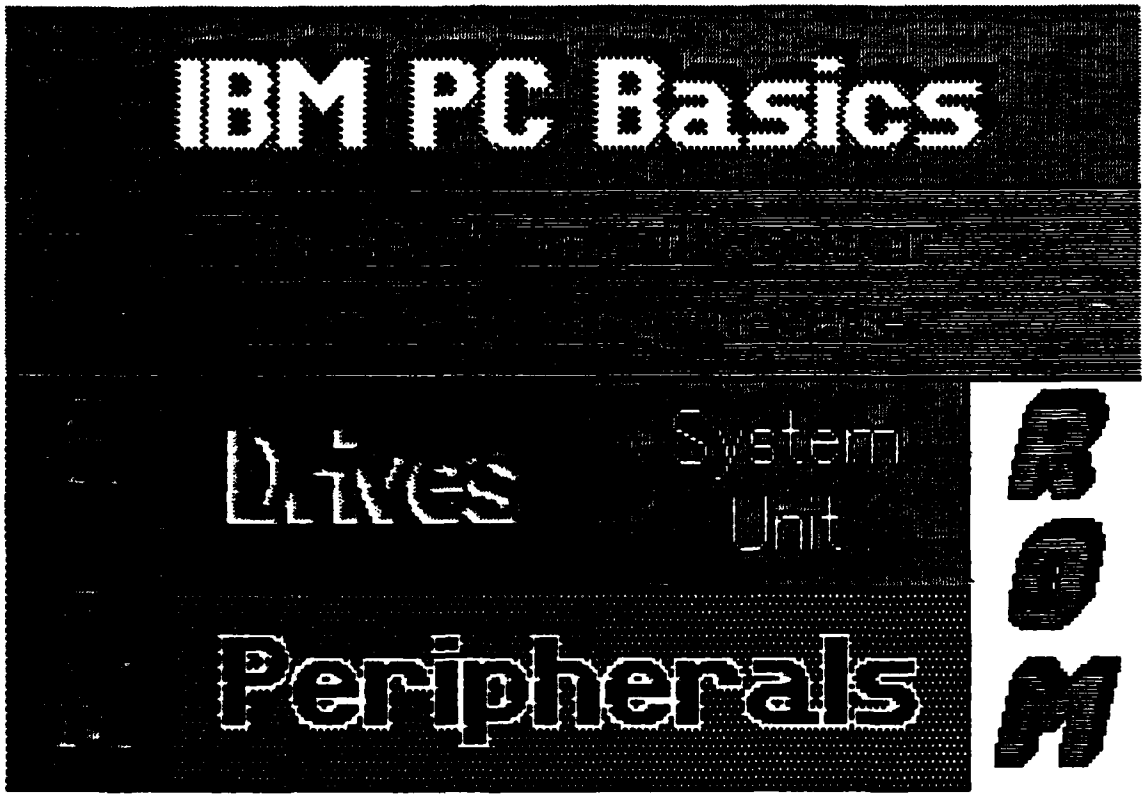
4) **SOFTWARE ON THE NETWORK** - this module categorizes the software available on the network and lists all of the software packages by name.

5) **FOR MORE INFORMATION** - this module lists the available documents that cover all of the above areas in greater detail. Also includes a glossary of computer terms.

6) **QUIT** - gets you out of the tutorial and back to DOS.

press SPACE bar to continue (page 1 of 1)


MAIN MENU
1. IBM PC Basics
2. DOS
3. Local Area Network
4. Software on the Network
5. For More Information
Q. Quit the tutorial


IBM PC Basics
Drives
System Unit
Peripherals
RAM

1) RAM

RAM stands for random-access memory. It is also called read/write memory. RAM is the memory internal to the central processing circuitry where program instructions (software) and program results are temporarily stored. The contents of a memory location in RAM can be changed by the software. RAM is used to store programs and information only while the computer is operating. The user's software can add to and change anything stored in RAM, but when power is turned off, RAM is erased.

2) ROM

ROM stands for read-only memory. It consists of integrated circuit chips which are electronically pre-programmed and contain information to start and run the computer. The information in these chips cannot be altered by the computer or the user.

3) **DISK DRIVES**

Disk Drives are mechanisms that read and write information to and from magnetizable plastic disks. Most computers have one or two drives that read flat, flexible disks called floppy disks. Some computers have hard drives that work with a cylindrical hard disk (see the section on Peripherals for more information on disks and diskettes). The drive which is being automatically accessed is called the "default" or "current" drive. When you refer to a file name without specifying a drive label, the computer assumes the file can be found on the default drive (see filenames in the DOS section).

In order to remind you which drive is the default drive, the operating system uses a "prompt."

The prompt for the IBM PC is the letter of the default drive followed by a greater than sign: A> for example (see prompts in the DOS section). There are normal conventions for naming drives:

- the first floppy drive is the A drive;
- if there is a second floppy, it is the B drive;
- a hard disk is normally labelled the C drive.

The computers in the Administrative Sciences lab use other letters to refer to drives on the network and network server computers (see The Local Area Network section).

In order to change default drives just type in the letter of the drive you want (either upper or lower case letters) followed by a colon. The prompt will change to show the new default drive.

Example:

prompt shown:	type in:	result:
A>, B>, or C>	C: <CR>	C>
	B: <CR>	B>

4) **SYSTEM UNIT**

The system unit consists of an internal circuit board connected through other circuit boards containing input/output ports to components such as:

The Central Processing Unit (CPU) - the heart of the computer. Every instruction must be examined and acted on by the CPU before it can be carried out.

Input/Output Devices - used to get the necessary information into and out of the computer. Examples of input devices include the keyboard, mouse, voice input devices, and disk drives; output devices include cathode-ray tubes (CRT), disk drives, plotters, and printers. In the lab, most input will be via the keyboard and disk drives; most output will be via printers and the CRT.

Clock - a device, usually based on a quartz crystal, that emits regular pulses used to coordinate the computer's operations.

Power Supply - a device for converting external alternating current into the direct-current voltages needed to run the computer's electronic circuits.

Dip Switches - a series of toggle switches inside the system unit that are used to tell the CPU various kinds of information, such as the amount of memory or the type of monitor that is in use with that particular computer system.

5) PERIPHERALS

The Cathode-Ray Tube (CRT)

In order to see what is being entered into the computer, a device is needed to show what you have typed. Some machines use printers for this purpose, but the most common device is a cathode-ray tube, or CRT. The CRT (or monitor) simply displays what information is going into or coming from the computer.

Disks and Diskettes

Floppy disks (diskettes) are warehouses that the PC uses to store programs and data for future use. Diskettes are inexpensive and hold large amounts of data that the PC can access rapidly. Unfortunately, they have one major problem: they are easily damaged. Keeping extra copies of information on more than one diskette is important. This is called backing up your diskettes. This is a good habit to develop to save yourself time and frustration if one of your diskettes is damaged.

Hard disks hold information just like floppy diskettes. Unlike diskettes, however, they are not removable. They are also called Winchester disks. They consist of hard platters that hold much more information than a diskette. They can also access information much faster, since they physically spin faster than diskette drives.

Modem

Modem is short for modulator/demodulator. It is a device that enables data to be transmitted between computers, generally over telephone lines, but sometimes using fiber-optic cables or radio frequencies. Another way to transmit data is to directly connect the computers together with wire. This is how the computers in the Administrative Sciences Lab are connected. (See the section on the local area network).

The Keyboard

This is the primary way we communicate with the computer. The most often used keys are described below:

Alphanumeric keys - the regular typewriter keyboard and number keys above the letters.

Numeric keypad - the set of keys to the right of the keyboard that can be used to enter numbers when the "Num Lock" key is depressed, or to direct the cursor (see arrow keys).

Function Keys (labelled F1-F10) - programmed to do certain functions, depending on the software being used.

Esc - can be used to "escape" from the current activity. This key is dependent on the software being used.

Alt - used with other keys to perform a certain function (for instance pressing Ctrl, Alt and Del simultaneously will reset the computer).

Ctrl - the control key is also used with other keys to perform certain functions.

Note: both the Alt and Ctrl keys work like the Shift key in that they are used in conjunction with other keys and must be held down while the other key is pressed.

PrtSc - can be used with the Shift key to send the information on the screen to the printer.

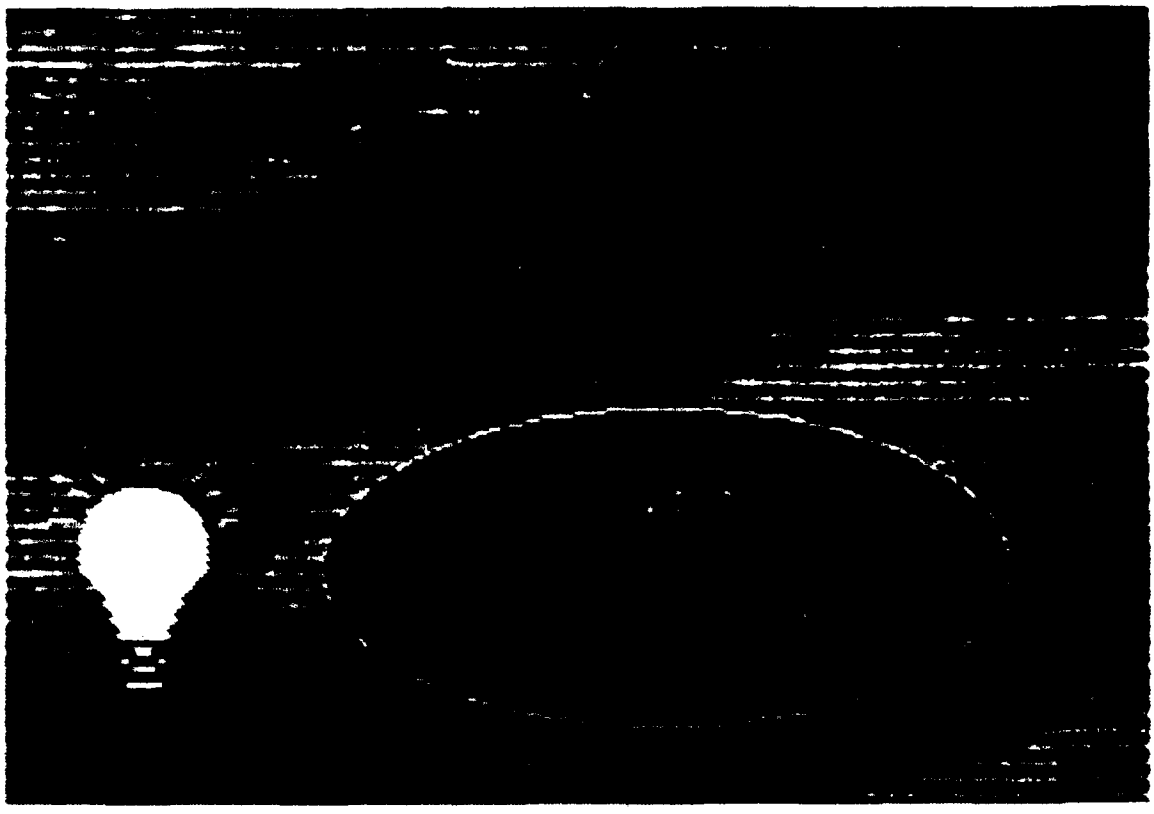
Backspace - backs the cursor up one space. Sometimes this will delete the last character typed, sometimes it will back up without deleting the character. This depends on the software.

Arrow keys - called "cursor control keys," these 4 keys move the cursor one space or one line in the direction indicated. They are only operational when the Num Lock key is not on.

Enter/Carriage Return - works like a return key on the typewriter--moves the cursor to the left-most position, one line down from where you were when you hit it.

Caps Lock - locks all letters typed into capital mode. Does not have any affect on the top row of number keys and the symbols above them. The Shift key must still be used to access these symbols.

SPACE=next page ESC=quit /MAIN=go to main menu (page 16 of 16)



THE OPERATING SYSTEM

An Operating System is a program which acts as an interface between a user of a computer and the computer hardware. The purpose of an operating system is to provide an environment in which a user may execute programs. The primary goal of an operating system is thus to make the computer system convenient to use. A secondary goal is to use the computer hardware in an efficient manner. It provides an environment within which other programs can do useful work.

IBM PC-DOS is the name of the operating system that controls the IBM Personal computer. It is IBM's version of MS-DOS, created by MicroSoft (thus the "MS").

Other operating systems you may have heard of include: VM/CMS (on the IBM 3033 here at NPS), AppleDOS, C/PM, Unix, and Z-DOS.

FILENAMES

All files residing on disks and diskettes must have unique filenames. There are conventions that must be followed when naming these files.

An example of a complete filename is:

"a:memo.txt"

where a: is the drive specifier,
memo is the filename, and
.txt is the extension.

The first part of a filename is the drive specifier. This tells DOS which drive the file resides on. If the default drive (the drive that is currently being accessed) is the drive you want, this can be omitted.

The filename must be from 1 to 8 characters long, with no spaces. Normally the name describes the contents of the file.

The extension must be from 0 to 3 characters long. Normally the extension describes the type of file it is.

Both the filename and extension can consist of any of the letters of the alphabet, the numbers 0 through 9 or the following characters:

{ } ! @ # $ % ^ & ( ) -

You may not use these characters in a filename or extension:

: . / *

because they have a special meaning to DOS.

The file extension is optional, but is very useful for indicating what type of data is contained in the file. The following are extensions that have a particular meaning to DOS and may be used to describe that type of file:

.bak - a BACKUP of another file	.lib - a LIBRARY file
.bas - a BASIC program	.map - a LIST file
.bat - a BATCH file	.obj - an OBJECT file
.com - an external COMMAND file	.$$$ - DOS-provided extension
.exe - an EXECUTABLE file	for files which
.hex - a HEXADECIMAL file	encounter problems

PROMPTS

In order for DOS to let you know it is ready to accept input from the keyboard, it displays a system "prompt". This prompt is a letter with a greater than sign following it (for example, "A>"). The letter specifies which drive is the "default" drive. This means that you are currently able to access the files on that particular drive. You may change drives by typing a new letter followed by a colon and then a carriage return. (See Drives in the section titled "IBM PC Basics".)

DOS COMMANDS

Specific words that are typed at the system prompt to tell the computer what to do are called "commands". Some of these are "internal" which means they are always available when at the system prompt (regardless of which drive is current). Other commands that are "external" to the system reside on a DOS diskette, or on the hard drive. You must specify the drive on which the command's file resides unless the file is on the default drive. A few useful commands (some external, some internal) are described ahead. You can learn about the others by referring to one of the references discussed in "For More Information".

Directory (DIR)

Typing DIR will give you a list of the files residing on the current drive. DIR followed by another drive letter and a colon (DIR B:) will list the files on that drive. If the list is longer than the length of the screen, DOS will automatically scroll to the end of the list. In order to see 25 files at a time, you may type "DIR/P" to "pause" between pages (and then type any key to continue the list). Or, you may get a "wide" list by typing "DIR /W", which lines up the files in columns across the screen.

Copy (COPY)

The copy command is used to copy files from one disk to another or onto the same diskette under a different name. For example, at the prompt type:

copy oldfilename newfilename

(to copy the file onto the same disk but with a different name)

copy filename b:

(to copy the file from the current drive onto B: (same name))

copy b: filename

(to copy a file from B: onto the current drive (same name))

Erase/Delete

You may erase a file residing on one of the drives simply by typing "ERASE" or "DEL" (for delete) and the name of the file. If the file you want to delete is on a drive other than the current drive, simply precede the file name by the drive letter and a colon.

Examples:

A>erase filename.ext or

A>erase b:filename.ext or

B>del filename.ext.

Note:

You can use global or wildcard characters (* and ? respectively) when using the previously discussed commands. This is helpful if you don't remember the exact filename, or you want to do something to all files of one type.

* Represents a variable character string.

? Represents a variable character in a specific location.

Examples:

copy *.* b:	will copy all files on the current drive to drive B:
delete *.bak	will delete all files on the current drive with the .bak extension. (See file names for more information on extensions.)
dir memo??.xed	will list all files on the current drive that start with the 4 letters "memo" and have the .xed extension, regardless of what is in the 7th and 8th position of the filename.

FORMAT

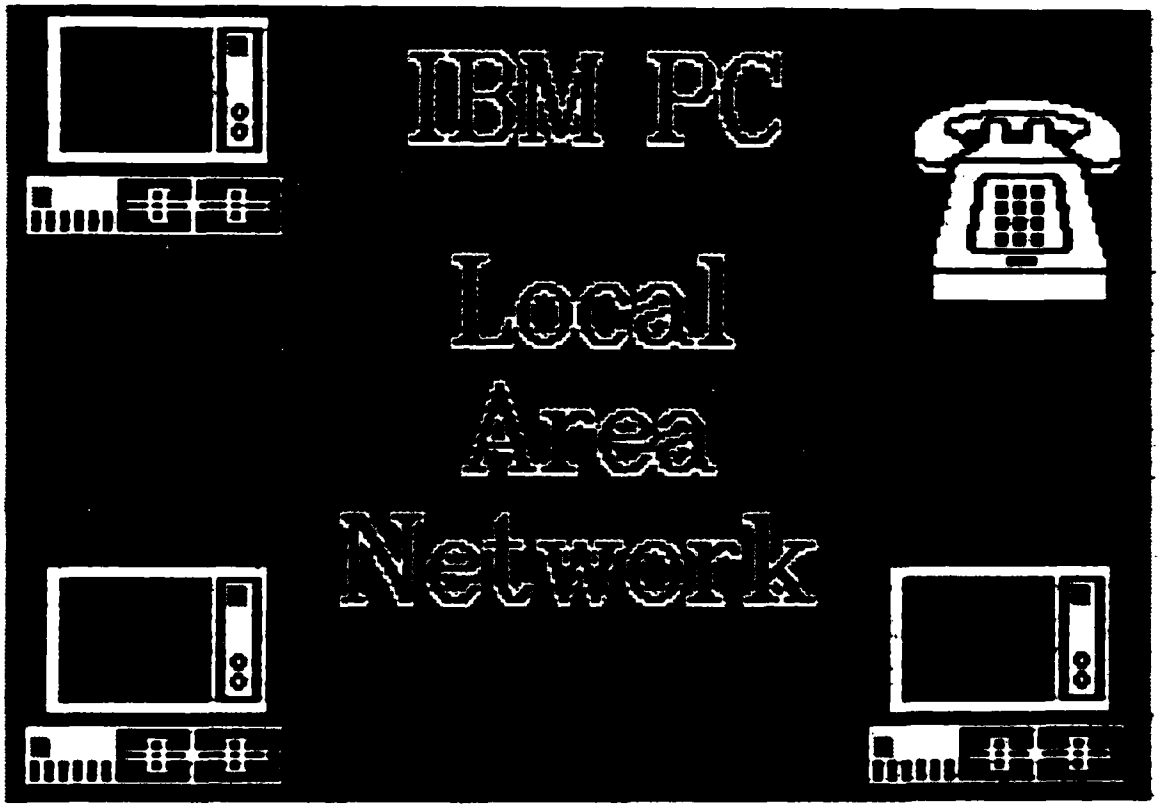
In order for a disk to be recognized by the operating system, it must be formatted. Generally, the only time you will need to format disks is when you have new, blank diskettes. Formatting performs the following functions:

- initializes the directory
- allows you to assign a volume label
- checks for defective tracks
- erases any data currently existing on the disk

The basic format command is:

format a:

This command will give you a double-sided, 9 sector non-system disk. If you want to be able to "boot" up the system with this disk in the A drive, then you add the parameter "/s" (format a:/s) after the drive letter to install the operating system on the disk. Remember, a disk that has not been formatted will not be recognized by the PC, so be sure to format all disks before you try to save any files on them.


IBM PC
Local
Area
Network

THE NETWORK

The PCs in this lab are all "connected" to each other by cable and can "talk" via the IBM PC Local Area Network (LAN) program and hardware. The network consists of hardware (computers, translator units, circuit boards, modems, etc.) and software (DOS 3.2, PC LAN Program) that, when operating together, allow all the computers to communicate with each other.

By accessing the network you can have the following capabilities:

- share files and software stored on the hard disk of the server
- transfer files between PCs
- send and receive messages
- use the network printers
- share devices and directories with other computers
- interrupt the application program you are using to access the network's functions and then easily return to what you were doing
- check the print queue on a network printer

SPACE=next page ESC=quit /MAIN=go to main menu (page 2 of 15)

1) Terms that are used when referring to networks

Network - A group of computers connected through adapters and cables.

Local Area Network (LAN) - A network of computers located within the same general area.

Server - The main computer of a LAN (an IBM PC-AT in this Lab) that contains the control unit and usually stores all the accessible software on its hard drive.

Data files - Files containing an individual's information. As opposed to keeping each person's data on the server's hard drive with the software, people should keep their own diskettes with their individual files on them.

Application directory - A subdirectory on the server that contains a listing of the applications software available to all computers on the network.

Device Names - Each computer and printer on the network must have a name that the network recognizes. When sending files to a printer or sending messages to another computer these names must be used to direct the information.

Printer Queue - The waiting line for items to be serviced. Files are sent to the printer and wait in the queue before it is their turn to be printed out. (This is necessary because the CPU can process data faster than the printer can print it.)

2) TO ACCESS THE NETWORK

In order to start the system with the network, place the diskette you will find on the top of the desk where the user computer is located in the A: drive and turn on the computer. This will start the system from that diskette which has the Network Program on it. Now you may use the computer as you wish and the Network Program will be accessible.

To access the PC LAN Program menu, press the CTRL-ALT-BREAK keys simultaneously. This will give you the LAN's Main Menu for Task Selection. Press the number of the task you want to access and then hit enter. Here is a brief description of what each task will do:

1. **Message Tasks**

   - send and receive messages
   - save messages
   - forward messages to another computer
   - receive forwarded messages from another computer
   - receive messages for another name
   - view the names of the computers from which you can receive messages

2. Printer Tasks

- access the network printer
- print a file (send a file to the print queue and/or check the queue)
- display the list of devices you can access

3. Disk or Directory Tasks

- use the network disk or directory
- display the list of devices you can access

SPACE=next page ESC=quit /MAIN=go to main menu (page 8 of 15)

4. **Network Status Tasks**

   - check the print queues
   - display network devices
   - display name of your computer

5. **Pause and Continue Tasks**

   - temporarily stop using a printer, disk, or directory
   - temporarily stop receiving messages
   - start any of the above again

   (these tasks apply to the server computer only, not to the user computers)

6. **Save and Cancel Network Setup**

   - change the configuration of the Network (to be done by the staff only)

7. **Help**

   - Press the F1 key to get the help menu.

To go back to what you were doing outside the PC LAN Program, type CTRL and BREAK simultaneously or, keep hitting ESC to go back to the main menu, then hit ESC one more time, and then Enter to confirm.

SPACE=next page ESC=quit /MAIN=go to main menu (page 10 of 15)

3) USING A NETWORK PRINTER

One of the ways to print a file is to use a printer attached to the server that you are connected to. If someone else has already sent a file to be printed, your file will be sent to the queue. Files sent to the network printer need an end-of-file (EOF) indicator before the printer will recognise that it should start printing. Press Ctrl-Alt-PrtSc all at the same time to give the printer the EOF indicator.

To see if your file has successfully been sent to the printer, you can check the print queue. If your file is not listed in the queue, you must re-send the file. After the file has been sent, type Ctrl-Alt-PrtSc again to indicate to the printer that your file is ready for printing.

4) TO ACCESS SOFTWARE FROM THE NETWORK

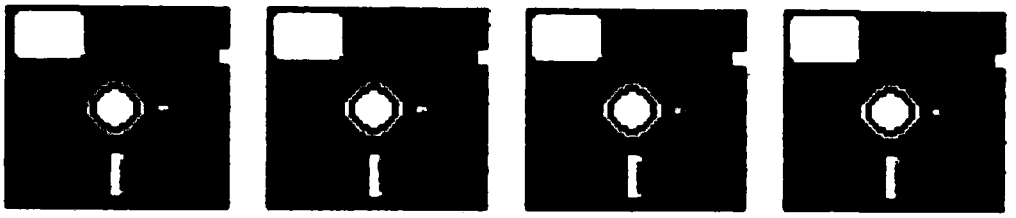
From the "1DIR" menu, at the E> prompt, type L:" to change to the L drive. Press Enter to confirm, as instructed. Now you have the directory of files and subdirectories on the L: drive (which is from the server that was accessed by your PC LAN diskette when you booted up your computer). If you want to access DOS commands in the DOS subdirectory, move the select cursor (with the arrow keys) to DOS and press ENTER (and ENTER again a second time to confirm). You are now in the DOS subdirectory and have access to all DOS commands. To get back to the L: directory, place the select cursor at "Previous Dir" and hit ENTER twice.

To access Word Processing packages, hit the down arrow key until Select points to WRD_PROC and press ENTER twice. You now have access to the word processing subdirectories. Choose whichever word processor you like in the same manner as you choose WRD_PROC. (See the section titled Software on the Network for a list of all software packages available).

5) TO USE THE PC AS A STAND-ALONE COMPUTER

Put the diskette you want to use in Drive A:. At the E> prompt on the "1DIR" menu, type A: to change to drive A. The "1DIR" menu will now list all the files on the diskette in Drive A. You simply move the Select cursor to the file you want to access and press ENTER twice.

SOFTWARE

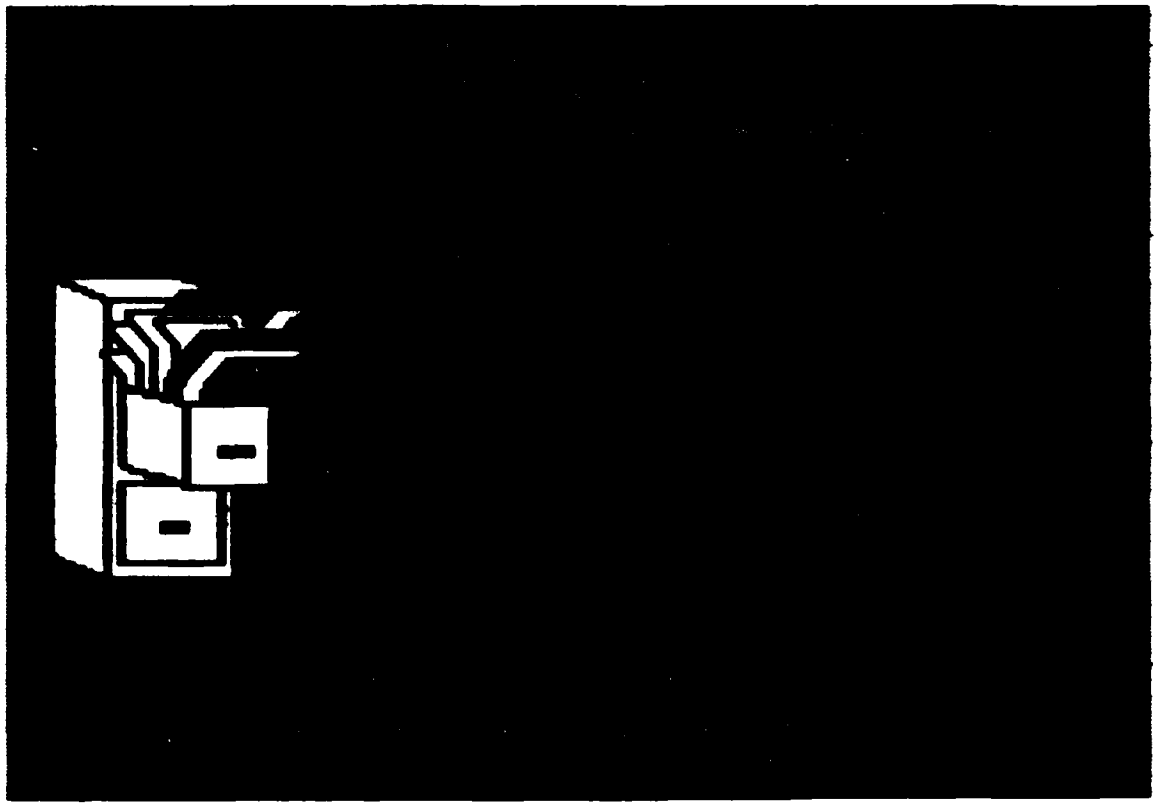


The following software packages are available for your use on the network

Press any key to continue

Type:	Name:
Word Processing:	WordPerfect
Database Management:	dBase II and III+
Spread Sheet/Electronic Calculator:	SuperCalc
Artificial Intelligence/DSS:	EXSYS and M1
Statistics Packages:	SPSS and Minitab
Programming Languages:	PASCAL and BASIC

press SPACE bar to continue (page 1 of 1)



The following written or computer based references are available here at NPS (ask your instructor where they are kept):

IBM Personal Computer -

Learning About the IBM PC (a diskette)

DOS -

PC-DOS Manual for the IBM PC

Software Packages -

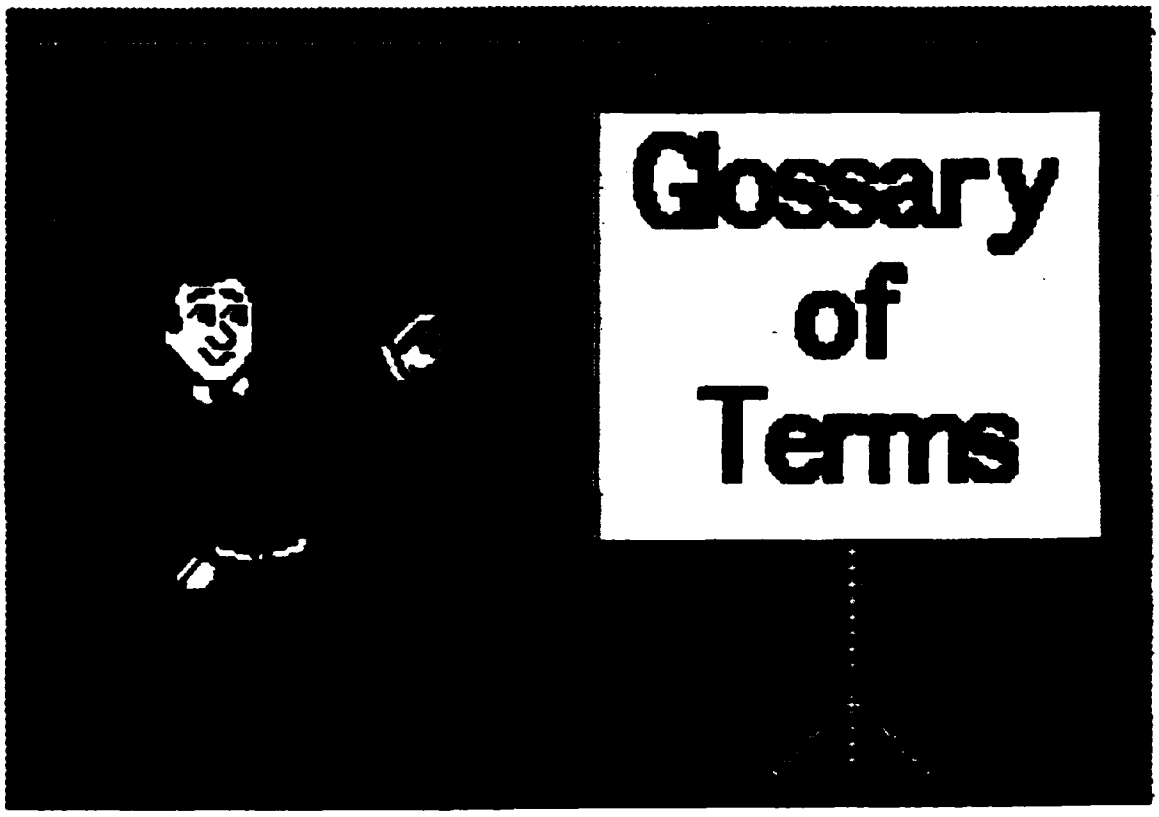
Software Documentation for each package

Network -

IBM PC Local Area Network Program Documentation

Hardcopy tutorial for the network and help screens

press SPACE bar to continue (page 1 of 1)


Glossary
of
Terms

Glossary of Terms

Application Program: A program written for a specific use (application), such as an accounting package.

Artificial Intelligence: The study of computer techniques to supplement the intellectual capabilities of humans. The research and study in methods of developing a machine that can improve its own operations or can perform functions normally associated with human intelligence such as reasoning, adapting, or learning.

ASCII: The acronym for American Standard Code for Information Interchange. This is the standard 8-bit information code used with most computers.

Boot: To automatically take a program from a disk or diskette, load it into memory and run it. The program is almost always the operating system.

Compiled: A program that has been permanently converted into machine code. Machine code is composed entirely of 1's and 0's and is the only code a computer can read by itself.

Copy Protected: A program or diskette that has been modified so that it cannot be copied. Copy protection is usually used as a means of preventing unauthorized copying and/or sales of application programs.

Cursor: A visual marker that tells you where you are on the video screen. The cursor is used extensively in application packages such as word processing. It can be moved around on the screen by using the arrow keys, and various other keys, depending on the program being run.

CRT: Cathode-Ray Tube. The monitor (also called screen, display, or terminal) attached to a computer.

Data processing: The execution of systematic operations performed on data using sets of defined rules and procedures. Data processing has evolved as a general term for using computers in business and other applications.

Default Drive: The drive presently under control of the operating system. Also referred to as the logged or current drive.

DOS: The acronym for Disk Operating System. The set of programs on a diskette or hard drive made up especially for a particular system and that provides the system with its operating capabilities.

DIR: The DOS command that indicates you want to see the directory of files on the drive specified.

Disk: A piece of metal or plastic to which a magnetizable coating has been applied and is capable of storing bits of data accessed by a computer.

File: A collection of records in a computer system where data is stored.

File Name: A tag used to identify a file. It often describes the file's contents.

Fixed Disk: Also called a hard drive or Winchester Drive. Non-removable disks used in microcomputers as well as minicomputers and mainframes. They have generally faster access to data and hold more of it than a floppy disk.

Floppy Disk: Also called a diskette. Usually refers to magnetic storage medium that uses a 5 and 1/4" flexible disk to provide random access storage for 300,000 or more bytes. The removable disk is mostly used in mini and microcomputers.

Format: A means by which parts, dimensional data, type of system, number of digits, and other functions for a particular application can be denoted.

Global Characters: Characters (* and ?) used to represent a group, or string of filename characters.

Hardware: The physical components of a computer system, including all electronic and electromechanical devices and connections.

Memory: An area the computer uses to store data and/or the program it is using. A computer copies a program from a hard drive or diskette and loads it into its memory.

Modem: A device that allows one computer to communicate with another computer via telephone lines.

Network: An interconnected combination of computers, printers, and other devices used to provide a communications path between two or more points. An assemblage of components usually containing many similar elements and devoted to a common function.

Non-system Disk: (Non-bootable) Floppy disks which do not contain the hidden files needed to boot up the computer. They are entirely dependent on the operating system already being loaded into the computer.

Off-the-Shelf: Pertains to the hardware or software that can be purchased in ready-to-use form from a dealer.

Operating System: A set of instructions/programs designed to manage the resources of a system and serve as an intermediary between the user and the hardware.

Peripheral: Any device connected to the computer and dependent on the computer for operational instructions, such as a printer or a modem.

Pixel (Picture Element): One of the tiny dots that makes up the characters or graphics displayed on the monitor screen. The more pixels there are per character, the finer the detail (higher resolution).

Program: A set of instructions that perform a task or tasks.

Prompt: A symbol that says the system is awaiting operator's entry or response.

Reboot: To restart the computer when it is already turned on. This is done by pressing the Ctrl key, the Alt key and the Del keys.

RAM: The acronym for Random Access Memory. This is temporary internal memory that can be both read from and written to. As soon as the system is rebooted or turned off, the data that was in RAM is gone.

ROM: Acronym for Read Only Memory. This is permanently stored memory inside a computer that contains instructions on how to access the drives, video screen, ports, etc. It is not erased when the power is turned off. ROM cannot be written to, only read from.

Scrolling: Advancing the display on the video screen so that new lines constantly come into view and old ones disappear. You can scroll toward the bottom of a file (so that you can read the file in a normal top to bottom manner), or you can scroll backwards toward the top of a file.

Sector: The smallest area of a disk which can be read or written by DOS. Depending on the operating system, there are generally 8 or 9 sectors per track on an MS-DOS disk. (See Track).

Spreadsheet program: A "super calculator" program, that provides you with a giant electronic grid that functions analogously to the traditional spreadsheet. When you change the values of numbers in one of the cells, the program automatically calculates what effect, if any, there is on all the other numbers.

SPACE=next page ESC=quit /MAIN=go to main menu (page 14 of 17)

Software: Instructions that are read and used by the system, enabling it to perform desired functions. The programs, routines, languages, and procedures used in a computer system. Software items include assemblers, generators, subroutines, compilers, and operating systems.

Syntax: A model to indicate required and optional characters needed to enter a command instruction from the keyboard.

Text editor: The software that provides the user with a source text generation system. The text editor permits the stored text statements to be altered at any time. The user can insert, delete, or replace lines of text. Some systems also allow editing on a word or character basis (as opposed to line basis).

Track: A ring (or cylinder) on a disk containing a preset number of sectors. An MS-DOS diskette has 40 tracks per side.

Utility Programs: Programs that perform system-related rather than data-related functions (e.g., copy and format programs, input/output configuration programs, etc.).

Word Processing: Operations that include information retrieval, management of information, text editing, typesetting, etc.

Working Storage: Also called memory, that area of the computer set aside for fast access of data.

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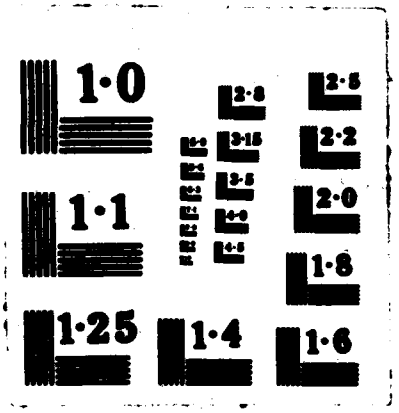
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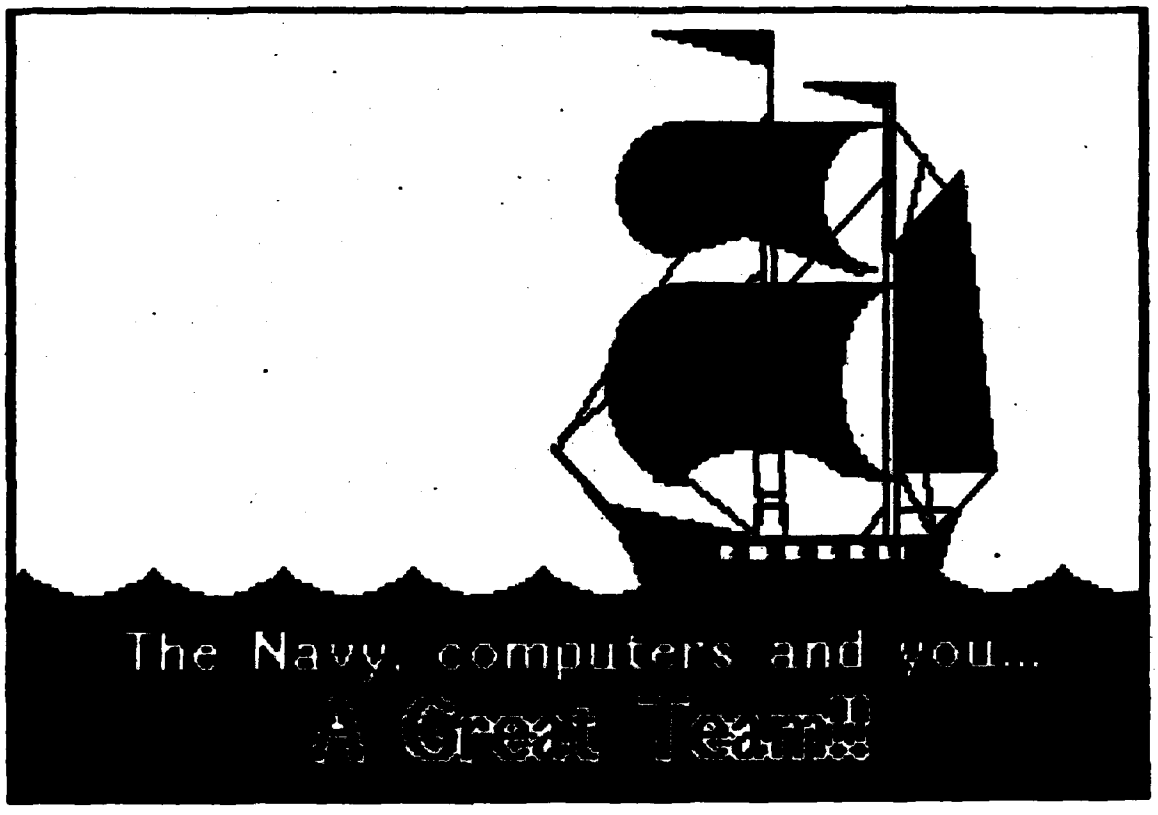
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A Great Team!

APPENDIX C
FILES ON THE TUTORIAL DISK

The following is a list of the files that are used to run the tutorial, and an explanation of each:

PICTURE FILES CREATED WITH PICTURE MAKER

ABOUT1.PIC tells what the tutorial is about
DOSTART1.PIC starts the DOS section
DOSTART2.PIC is the blinking "DOS" used with DOSTART1.PIC
FYISTART.PIC starts the For More Information section
GLOSS.PIC starts the Glossary
MAIN1.PIC is the overlay when section 1 is selected
MAIN2.PIC is the overlay when section 2 is selected
MAIN3.PIC is the overlay when section 3 is selected
MAIN4.PIC is the overlay when section 4 is selected
MAIN5.PIC is the overlay when section 5 is selected
MAINMENU.PIC is the Main Menu
MAINQ.PIC is the overlay when Quit is selected
NETSTART.PIC is the start of the Network section
PCOVER.PIC is the Title page
PCSTART.PIC starts the IBM PC section
PRESS.PIC is the overlay for Press any key to continue
QUITINST.PIC is the overlay to tell how to quit
REMEMBER.PIC is the overlay at end of tutorial
SOFTSTAR.PIC starts the Software section
WAVES1.PIC is the final picture of the ship
WAVES2.PIC is parts of WAVES1.PIC repeated
WELCOME.PIC is an introduction screen

TEXT FILES CAPTURED WITH PICTURE TAKER

FYINFO.CAP is the text of For More Information
GLOSSARY.CAP is the text of the Glossary
NETWORK.CAP is the text of the Network section

PCBASICS.CAP is the text of IBM PC Basics
PCDOS.CAP is the text of the DOS section
SOFTWARE.CAP is the text of the Software section
TOPICS.CAP is the text of the Topics covered

OTHER FILES

AUTOEXEC.BAT starts the tutorial automatically
COMMAND.COM is used to boot up the computer
ST.EXE is the Storyteller Program
TUTOR.SH is the file that ST.EXE runs

LIST OF REFERENCES

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IBM PC Local Area Network Program Documentation, International Business Machines Corporation, 1986.

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